

Supplementary File 1. Protocol**Scanxiety: A scoping review about scan-associated anxiety**

Protocol

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Introduction

Radiological scans are necessary to diagnose and stage cancers, to monitor for cancer recurrence or progression or to investigate new cancer- or treatment-related problems. Imaging modalities include plain X-rays, computed tomography (CT) scans, positron-emission tomography (PET) scans, magnetic resonance imaging (MRI), ultrasound and nuclear medicine bone scans.

Distress before, during or after a scan has been dubbed “scanxiety” by a patient writing for the Time Magazine in 2011[1]. This is a common clinical problem that is widely discussed on social media and patient forms, but there is a paucity in the literature about this topic. This systematic scoping study aims to increase the understanding about scanxiety.

Objectives

The objectives of this study are to:

- determine the incidence and severity of scanxiety in adults who have scans for cancer-related reasons;
- compare tools that measure scanxiety;
- identify contributing and exacerbating determinants of scanxiety;
- identify strategies or interventions that reduce scanxiety; and,
- explore the experiences of scanxiety for patients and other stakeholders

Methods

This protocol is based on the six-step methodological framework developed by Arskey & O’Malley[2] and modified by Levac *et al.*[3], and guided by the Preferred Reporting Items for Systematic review and Meta-Analysis Protocols extension for Scoping Reviews (PRISMA-ScR) checklist[4].

Inclusion and exclusion criteria

Publications will be included if they were original full-text research articles that addressed scanxiety in adults over 18 years of age who had a scan for a cancer-related reason. Outcome measures have to include at least one of the following: the incidence of scanxiety; severity of scanxiety; contributing or exacerbating factors of scanxiety; intervention to improve scanxiety, or; experiences of patients with scanxiety. All types of non-interventional imaging modalities are acceptable. Any type or stage of cancer is acceptable, including populations undergoing cancer screening. No date or language restriction will be applied to electronic database searching.

Interventional imaging will be excluded. Review articles, editorials, letters and protocols will be excluded.

Search protocol

A systematic review of the following electronic databases will be conducted by one author (KTB): Ovid MEDLINE, Ovid EMBASE, Ovid PsycINFO, Ovid Cochrane, Scopus, ESCO CINAHL and PubMed. The search strategy will combine the subject headings and keywords of cancer (neoplasm* or cancer* or malignan* or tum??r* or oncolog* or carcinoma*), imaging (diagnostic imaging or imaging or scan* or tomography or ultraso* or radionucl*) and anxiety (anxi* or fear* or worry* or distress*). Hand searching of reference lists of included articles will be undertaken.

All references will be imported into Endnote V9. After removal of duplicates, two authors (KTB and RL) will independently review and screen publication titles and abstracts for eligibility. Of the articles deemed potentially eligible, the full text of the article will be evaluated for final inclusion.

Discrepancies will be decided by discussion between the two authors (KTB and RL), and will be escalated to all authors if a consensus cannot be reached.

Data extraction and analysis

Standardised data collection forms will be developed. Relevant data will be independently extracted from by two authors (KTB and RL) into an electronic data extraction form (Table 1).

Table 1. Included data items on the electronic data extraction form

Publication details	Study name/Title of article Study authors Date of publication (year) Country the study was held
Study details	Study aims Population including age, gender, type of cancer Study design Measurement tool used for scanxiety
Results/outcomes	Sample size Demographics – gender, age Cancer factors – type of cancers included Incidence of scanxiety

	Severity of scanxiety Contributing and exacerbating determinants of scanxiety Experiences of scanxiety for patients and other stakeholders If intervention: efficacy
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Data will be analysed depending on the population who underwent imaging (eg for screening, for early cancer or for advanced cancer) and the type of study (eg observational or intervention). Quantitative findings will be synthesised using summary statistics including the mean and range.

Consultation

Health care professionals with clinical experience in oncology and psychology will be consulted for content expertise and to discuss preliminary findings.

References

1. Feiler B. Scanxiety. Fear of a postcancer ritual. *Time*. 2011;177(24):56.
2. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*. 2005;8(1):19-32.
3. Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implement Sci*. 2010;5:69.
4. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med*. 2018;169(7):467-73.

